AMENDMENTS TO THE SPECIFICATION:

Replace the paragraph at page 3, beginning at line 11, with the following amended paragraph:

Figure 2A is a prior art logical block diagram showing operation of a discrete communication system 36A using an LDPC coding scheme of multiple coding rates for its error control. An information source 38 outputs a K dimensional sequence of information bits **s** into a transmitter 39A, the transmitter including at least an encoder 40A, a modulation block 42, and storage 35A, 37A. An LDPC encoder 40 encodes the sequence **s** into an N dimensional codeword **t** by accessing a stored LDPC mothercode definition 37A and one of several stored puncture sequences 35A, one puncture sequence corresponding to one code rate. The codeword **t** is broken up into sub-vectors, which are then modulated and up-converted at a modulation block 42 and transmitted as a vector **x** of the sub-vectors over one or more channels 44. Additive white Gaussian noise **n** is added at the channel and/or from system hardware, so that the vector **y=x+n** is input into a receiver 45A. The receiver 45A includes at least a demodulation block 46, a decoder 48A, and memory storage for the same LDPC mother code 37A and the same puncture sequences 35A used by the transmitter 39A. Since **x** and **n** are uncorrelated and the modulation is memoryless, the received vector **y** can be demodulated symbol-by-symbol at a demodulating block 46, producing a hard decision vector $\hat{t}$ on the received information vector **t**. Probabilities of the decision being correct are also calculated at the demodulation block 46, and all this is input into an LDPC decoder 48A that iteratively decodes the entire received code block and outputs a decoded information vector $\hat{s}$ to an information sink 50.

Replace the paragraph at page 5, beginning at line 24, with the following amended paragraph:

The present invention is directed to a coding/decoding system that is more compatible with adaptive coding communication systems, especially by requiring less memory. The present invention may be embodied in a communication unit such as a transmitter, in a receiver, or in a transceiver that may puncture codewords at any of several code rates, puncture meaning to remove or to add an element to the codeword in accordance with known practice. In accordance with one aspect of the present invention, the communication unit for a multiple code rate communication system includes a codeword. The codeword defines N codeword elements, K information elements, and P punctured elements. The particular code rate is

R=K/(N-P). The transmitter or receiver further includes a first storage location for storing an error reduction code mother code definition. Preferably, this is an LDPC mother code definition such as a parity check matrix of dimensions of (N-K) rows and N columns.

Replace the paragraph at page 6, beginning at line 15, with the following amended paragraph:

Another aspect of the present invention is a computer program embodied on a computer readable medium for determining a puncture sequence for a codeword. The computer program includes a first storage location for storing a LDPC mother code definition. It also includes a second storage location for storing a plurality of memory elements M_{all} that in combination comprise a maximum rate puncture sequence S_{max} that corresponds to a maximum code rate R_{max}. The computer program further includes a first set of computer instructions for reading a first subset of memory elements M_{set1}. The number of the first subset of memory elements is less than the number of the plurality of memory elements that comprise the maximum rate puncture sequence. The specific memory elements M_{set1} comprises a puncturing sequence S_1 that corresponds to a code rate R_1 that is less than R_{max}.

Replace the paragraph at page 8, beginning at line 10, with the following amended paragraph:

The present invention enables an LDPC encoder or decoder to use significantly less memory than prior art approaches by using a single puncture sequence S_{N-K} for the maximum rate R_{max}, and forcing all puncture sequences S_x for lesser rates R_x to be a subset of the maximum rate puncture sequence S_{N-K}. Consider the communication system 36B of Figure 2B, which is similar in many respects to that of Figure 2A. The communication system 36B would like to communicate K bits of information per codeword using different code rates by puncturing the code words encoded from a single LDPC mother code definition of rate K/N where N is the length of the code words (i.e. number of elements in the each code word). The encoder 40B selects and punctures P codeword bits by removing these bits from the codeword elements that are to be sent through the channel 44. Thus, the puncture count, $P \in \{0,1,\ldots,N-K\}$, determines the effective code rate of $K/(N-P)$. The encoder 40B accesses memory that stores a LDPC mother code definition 37B and a maximum code rate puncture sequence S_{max} 35B. S_{max} corresponds to the maximum code rate R_{max}. For lesser

code rates, subsets of S_{max} determine the puncture sequence, so all of the puncture sequence information is stored in S_{max} 35B.